

**Abstract**

[0063] The optical wavelength standard comprises a diffraction grating having a diffractive surface, an input arrangement and an output optical arrangement. The input optical arrangement is located to illuminate the diffractive surface of the diffraction grating with incident light at an angle of incidence at which absorption of the incident light at a resonance wavelength generates surface plasmons. The output optical arrangement is located to receive the incident light specularly reflected from the diffractive surface of the diffraction grating as reflected light. The reflected light includes an absorption line at the resonance wavelength. The absorption line provides the wavelength reference. The resonance wavelength is defined by the angle of incidence and the physical characteristics of the diffraction grating. A desired resonance wavelength can be obtained by appropriately defining the angle of incidence and the physical characteristics of the diffraction grating. Moreover, the resonance wavelength can be changed by changing either or both of the angle of incidence and the diffraction grating.

[0064]